CDM

West Fork of the White River TMDL

Technical Memorandum No. 1C

To: *Robin Garibay/Advent*

From: *Gary Mercer, Heather Cheslek/CDM*

Date: *May 16, 2003*

Subject: *White River TMDL*
Compliance with E. coli Bacteria Standards and Guidelines

CDM has gathered the available data from the City of Indianapolis Office of Environmental Services (OES), the Marion County Health Department (MCHD), and the Indiana Department of Environmental Management (IDEM) pertaining to the White River from the upstream boundary of Marion County downstream to Waverly for use in performing a Total Maximum Daily Load (TMDL) for cyanide, ammonia, *E. coli* bacteria, and dissolved oxygen. IDEM has approved OES and MCHD data (see CDM Technical Memorandum No. 1A Technical Memorandum No. 1B dated January 15, 2003). The following paragraphs discuss the compliance evaluation of the existing bacteria loadings with the Indiana *E. coli* standard in the West Fork of the White River.

Reference *E. coli* Bacteria Standards and Guidelines

E. coli Bacteria data for 2000, 2001, and 2002 from the sources mentioned above were analyzed for compliance with three reference criteria as follows:

- IDEM's water quality standard for *E. coli* which 1) is a geometric mean of 125 cfu/100 ml or less, (taken equidistant over a 30 day period), nor 2) any sample > 235 cfu/100ml in a 30 day period,
- IDEM's 303(d) Listing Methodology (2002) guidance:
    - No more than 10 percent of samples be above 235 cfu/100 ml, and
    - No sample having an *E. coli* level greater than 10,000 cfu/100 ml.

In order to better determine bacteria sources the data was separated into two categories, wet weather and dry weather. Wet weather constitutes precipitation (greater than trace amounts

or greater than 0.1 inch) and three days following that precipitation. Dry weather is any time other than wet weather.

The White River was divided into three segments for analysis purposes.

- Upstream Marion County line to Lake Indy (upstream of CSO area),
- Lake Indy to Tibbs/Banta (within CSO area), and
- Tibbs/Banta (within CSO area) to Waverly (downstream of CSO area).

Table 1 and Figure 4 show the extent of each river segment. The segment between the upstream Marion County Line to Lake Indy is considered upstream of the CSO area since the three CSOs that discharge within that area are only active an average of one time per year.

The findings of the compliance analysis is presented in Table 2 for three segments on the White River for dry weather, wet weather and all weather. The geometric mean values of 2000 to 2002 data for these segments when considering all data and wet weather are above the Indiana standard of 125 cfu/100 ml. During dry weather only the segment downstream of the CSO area had a geometric mean value above the Indiana standard of 125 cfu/100 ml.

No segment on the White River fell below the 10% maximum for the number of samples with levels at or above 235 cfu/100 ml under all conditions. For dry weather conditions all segments on the White River meet the requirement of no *E. coli* levels above 10,000 cfu/100 ml. When considering wet weather conditions and all data no segment on the White River met the requirement of no *E. coli* levels above 10,000 cfu/100 ml.

This information can also be seen graphically in figures 1 through 3.

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Table 1: Segment River Mile

River Segment	River Mile Start	River Mile End
White River - Upstream of Lake Indy	251.7	235.6
White River - Within CSO Area	235.6	225.1
White River - Downstream of CSO Area	225.1	212

Table 2: *E. coli* Bacteria Compliance

All Data

River Segment	Geometric Mean of 2000-2002 data	% of Samples > 235 cfu/100 ml	Number of Samples > 10,000 cfu/100 ml	Total Number of Samples
White River - Upstream of Lake Indy	166	32.9%	1	155
White River - Within CSO Area	238	46.2%	4	184
White River - Downstream of CSO Area	410	63.8%	2	47

Dry Weather

River Segment	Geometric Mean of 2000-2002 data	% of Samples > 235 cfu/100 ml	Number of Samples > 10,000 cfu/100 ml	Total Number of Samples
White River - Upstream of Lake Indy	74	19.1%	0	47
White River - Within CSO Area	99	25.3%	0	91
White River - Downstream of CSO Area	165	44.0%	0	25

Wet Weather

River Segment	Geometric Mean of 2000-2002 data	% of Samples > 235 cfu/100 ml	Number of Samples > 10,000 cfu/100 ml	Total Number of Samples
White River - Upstream of Lake Indy	236	38.9%	1	108
White River - Within CSO Area	561	66.7%	4	93
White River - Downstream of CSO Area	1159	86.4%	2	22

State Guidance [1] **(IDEM standard of 125 cfu/100 ml)** **(IDEM Guidance 10% or less)** **(IDEM Guidance None > 10,000 cfu/100 ml)**

[1] Indiana's 303(d) Listing Methodology for Impaired Waterbodies and Total Maximum Daily Load - September 2002

Figure 1: *E. coli* Bacteria Compliance – White River Upstream of Lake Indy

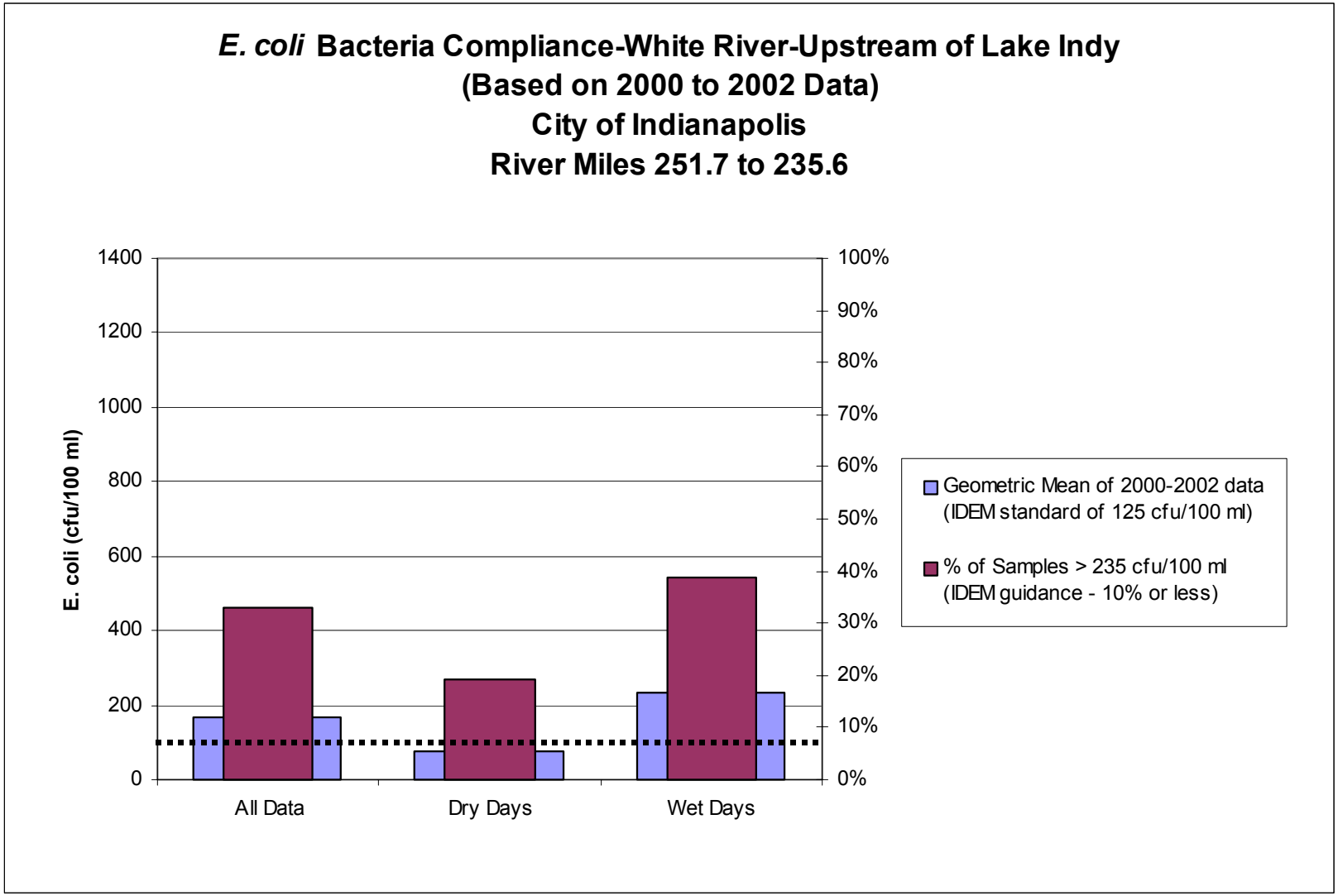

Figure 2: *E. coli* Bacteria Compliance – White River Within CSO Area

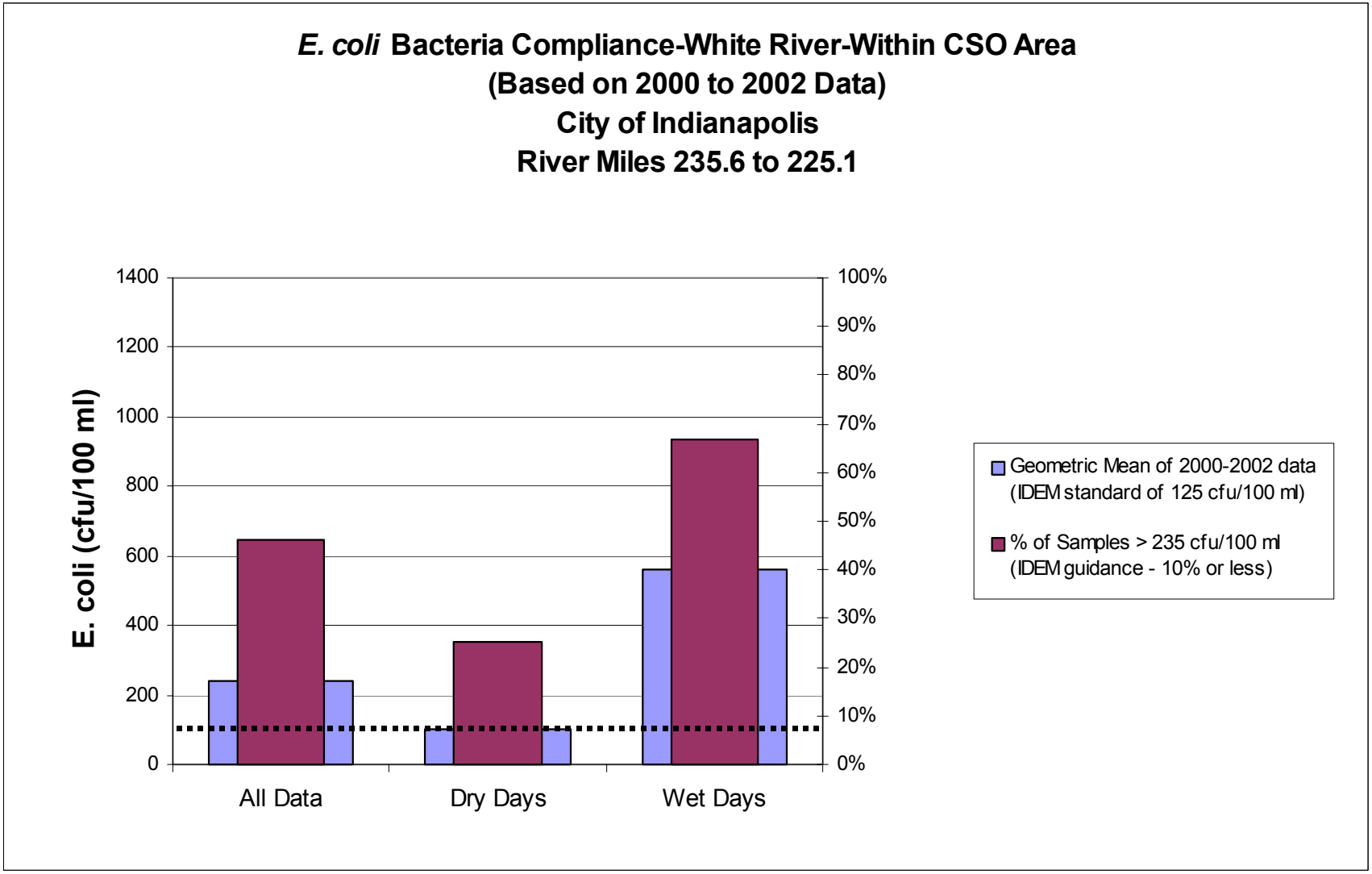

Figure 3: *E. coli* Bacteria Compliance – White River Downstream of CSO Area

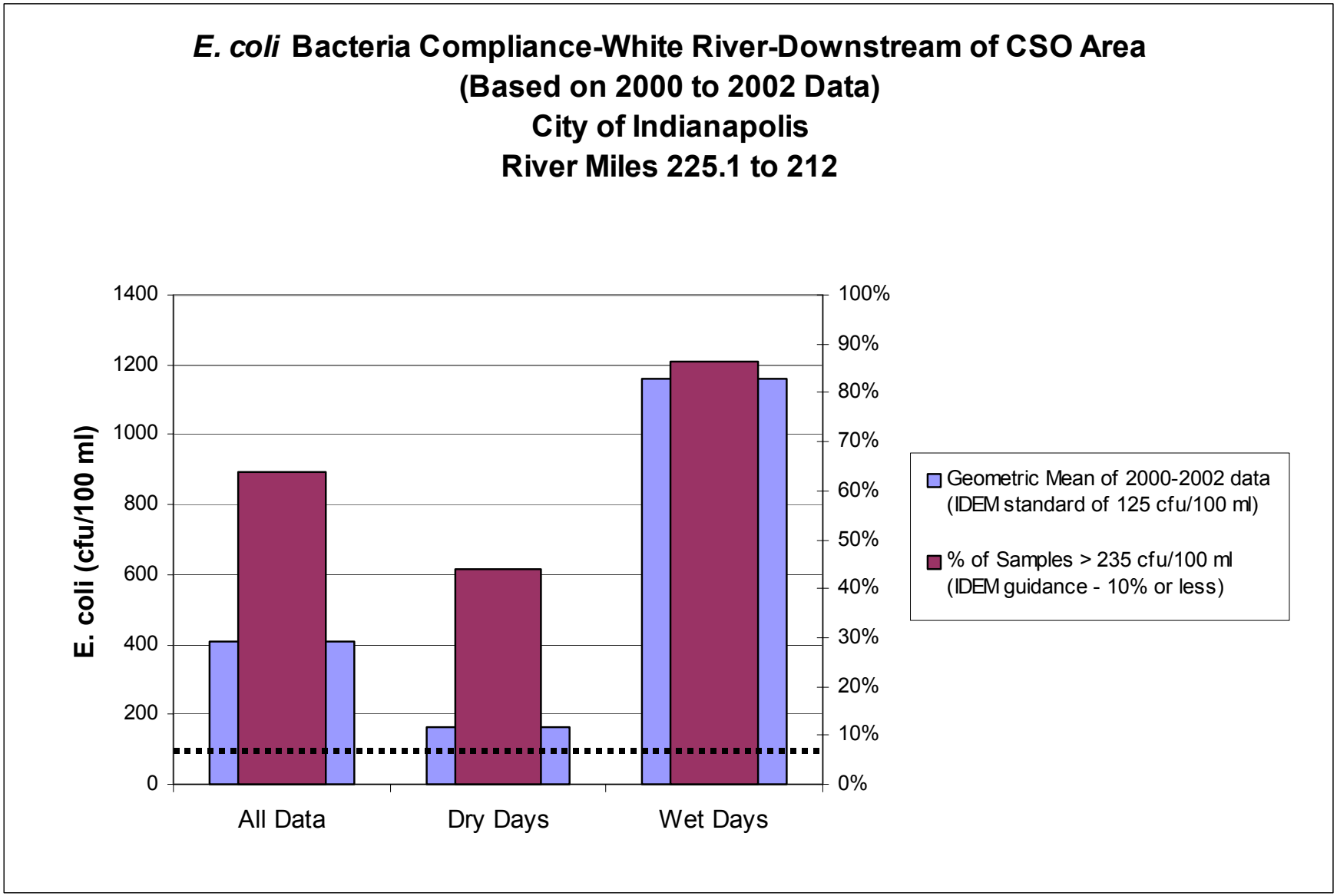

Figure 4: White River - River Segments